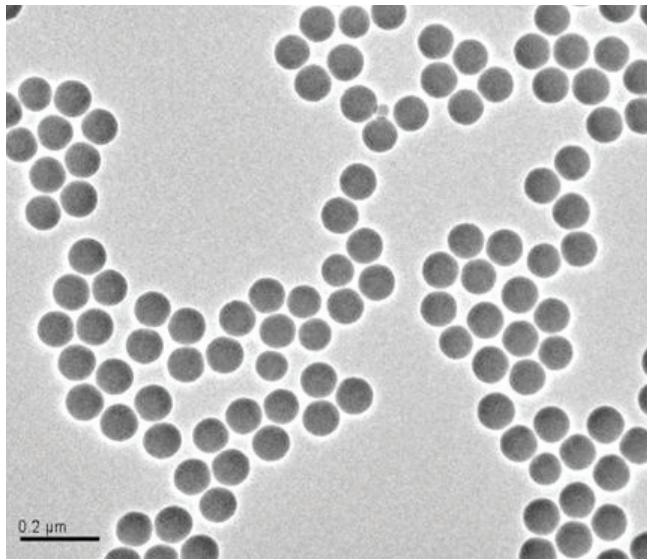


### NANO-ENCAPSULATION OF PHARMACEUTICS

The encapsulation of active pharmaceutical ingredients (API) into nanoparticles opens new routes of administration and treatment. Using room temperature sol-gel polymerisation in reverse emulsions, active pharmaceuticals can be encapsulated inside silica nanoparticles. The size of the particles can be precisely tailored from 10 to 250 nm and the release rate can be controlled from days to months. The surface of the particles can be functionalised to minimise protein interaction and enhance blood circulation, for active targeting.



TEM image of monodisperse silica nanoparticles

### KEY ADVANTAGES OF CERAMISPHERE™

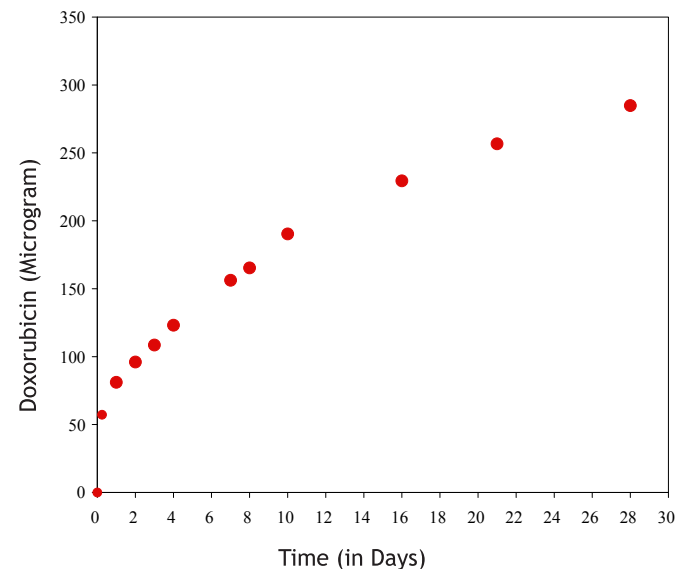
#### NANO-DELIVERY SYSTEM

- Tailored particle size
- Tailored release rate
- Protection of sensitive actives from their environment until release
- Sustained release of small molecules over several months
- Biocompatibility of silica
- Long term biodegradability of silica

- Easy functionalisation of the surface and grafting of targeting ligand
- Pegylation for enhanced blood circulation

### SUSTAINED RELEASE FROM NANOPARTICLES

A model anticancer drug, doxorubicin was encapsulated in 250 nm particles. In-vitro characterisation shows extended release into phosphate buffered saline over a period of one month.



### APPLICATIONS

- IV drug delivery
- Delivery of anti cancer drugs by passive targeting of tumours
- Transdermal delivery
- Functionalised optical fibres